

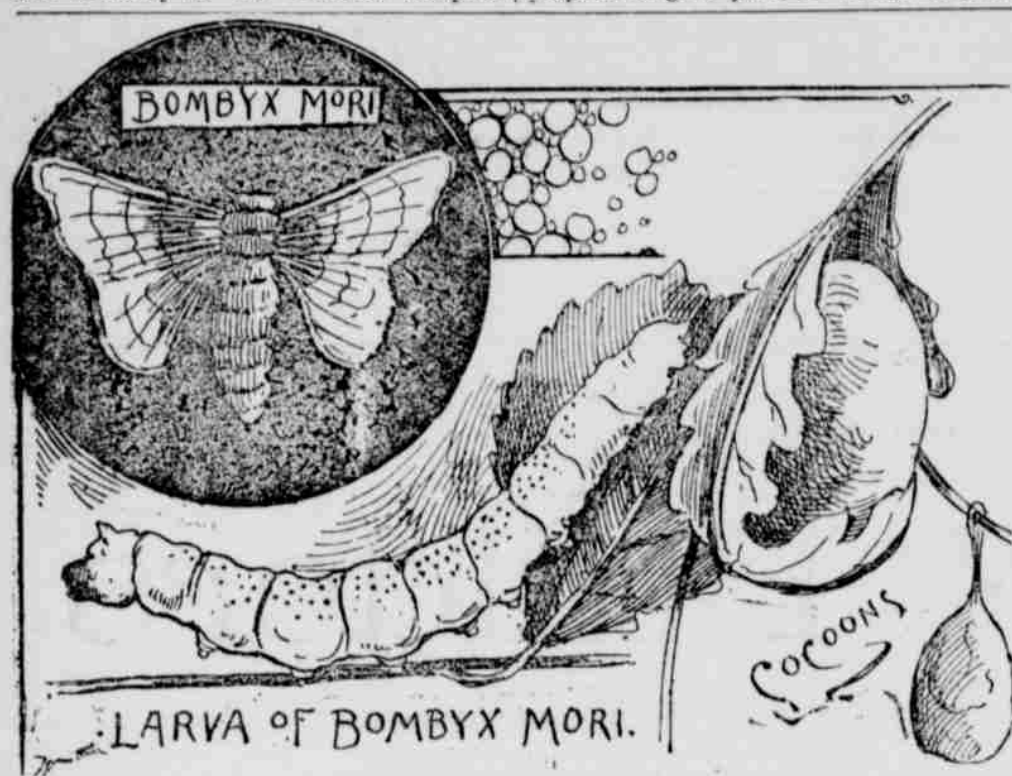
THE SILK INDUSTRY.

SINGULAR ORIGIN OF AN IMPORTANT MANUFACTURE.

Care of the Worms—Unwinding the Cocoons—Enormous Prices Paid in Early Times for the Fabric—Larva and Moth—An Exhibition of the Finished Product.

About the Silk Worm.

The credit of originating the silk industry is due to a woman. About 4,500 years ago, the Empress Si-Ling-Chi was passing an artificial pond in the palace grounds, when she perceived, lying in the water, certain cocoons of a bright yellow color, from which pretty threads floated away on the surface of the water. She bade one of her maids stoop and gather up the threads, when, to her astonishment, they unwound from the cocoons. The process continued, the bright yellow strands were wound round a stick until the cocoons were exhausted, and thus was begun what, next to tea-growing, proved to be the most important industry of the Chinese Empire.



THE COCOON—LARVA AND MOTIL.

The incident led to the prosecution of experiment; the threads were spun and woven, and gorgeous fabrics, such as till then the world had never seen, soon adorned the Princesses and her maids of honor. For her discovery she was held



THE TURKISH WAY OF KILLING THE CHRYSALIS.

In the highest esteem; she was enrolled among the Chinese goddesses under the title of Sientshu, "the first who raised silkworms," and to the present day is the patron deity of all silk-worm growers and silk-workers.

Understanding the importance of



UNWINDING THE COCOONS IN A CHINESE VILLAGE.

their newly discovered manufacture the Chinese made an effort to keep it a secret and derive a benefit from the export of silk, without allowing others to share in the knowledge of the manner in which it was made. The frontiers were guarded. It was made a crime punishable by death to carry either silk worms, their eggs, or cocoons out of the empire. The silk was only exported, and for twenty centuries the Chinese enjoyed a monopoly of the silk manufacture. About 530 A. D. a couple of monkish missionaries, in the course of their wanderings, crossed the Chinese frontier. They were kindly received, and for some years a hole in a city in the South of China. There they learned the secret of the silk manufacture, and on their return determined to convey their knowledge and the means of spreading the industry to Europe. Each prepared a hollow cane as a walking staff, and filled the hollow with silkworm eggs. Th so they smuggled across the frontier, and after many weeks of weary travel finally reached Constantinople, and were admitted to the presence of Emperor Justinian. To him they related the marvelous story and presented their treasures. Under the instructions of the monks, who had witnessed the methods practiced by the Chinese, the eggs were placed under favorable conditions, the worms reared and the first cocoons ever seen in Europe were spun into thread.

From this humble start, says the *Globe-Democrat*, the silk industry of Europe began. It was destined to reach mighty proportions and in time to be so aided by machinery and mechanical devices of various descriptions as

scarcely to be recognizable by the originators. In certain essentials the silk industry is, of course, practically to-day what it was in the time of Justinian, or for that matter in the time of the Empress Si-Ling-Chi, but the use of machinery for unwinding the cocoons and for spinning the thread has practically placed the business under new conditions. Meantime, however, the Chinese have kept on in the same way without the slightest improvement on the methods of 4,000 years ago, and in a Chinese village of the present day men and women may be seen reeling off threads from the cocoons just as their ancestors did in the time of Christ. It is an industry which can be followed anywhere, and in the humblest Chinese dwellings, in the boat houses along the rivers, in the alleys which in every direction branch out from the main streets of any Chinese city, the silk reeler and his primitive apparatus may be seen.

Any one, however, who, from the fact that the work is done by ignorant people, comes to the conclusion that a fortune is easily made by raising silkworms, labors under a serious mistake. There are few industries in which chance plays so large a part, or which require

cultivated. Seven hundred and thirty pounds of leaves are required to make seventy pounds of cocoons, and the greatest care is needed in feeding the worms. The leaves must be chopped and evenly distributed throughout the trays, otherwise the worms will be unequally fed. The products of two hatchings, unless of exactly the same size, must be kept apart, or the smaller worms will starve. After eight weeks of eating, the worm requires four or five days to spin its cocoon, and in two or three weeks will emerge a perfect moth. Both as worm and moth, however, he is sluggish in the extreme, the worms seldom moving from the trays in which they are placed, and the moths rarely attempting flight. They lay their eggs upon the cloth placed to receive them, and die in a few hours, taking no nourishment after reaching the moth or perfect state.

Only those insects designed to propagate their kind are allowed to come to perfection, for as soon as the spinning ceases, which is determined by the absence of sound from within the cocoon, a small instrument having been devised for the purpose of ascertaining if the worm is still at work, the cocoons are stifled or placed in hot water in order to kill the insects and prevent further development.

In Mount Lebanon, where the silk manufactures are extensive, the cocoons are frequently crushed with a mallet; but the general impression is that by this process the silk is injured. Both in China and India the insects are killed with boiling water, which is believed to do its work effectively, without in the least harming the precious covering. After stifling the cocoons they are loaded into trays or baskets, and transported to the reeling, who begin operations by stripping the cocoon of its delicate fleshy covering, which then becomes "waste" or rejected silk. The cocoons are then placed in water and stirred with a carefully trimmed birch rod, which is lifted from time to time to ascertain if any threads are adhering to it. As soon as one is found it is carefully traced to its cocoon, another is picked out and joined to it when four or five are thus collected the combined thread is placed upon a reel which is slowly turned and the threads unwound from the original package. Much care is required at this part of the operation, for the threads are of unequal length, and, besides, are frequently broken, so as soon as one runs out or breaks another is found and joined at as nearly as possible the same point. The reel must be far enough from the pan containing the cocoons to allow the thread to dry in transit, and the tediousness of the process may be judged from

the fact that the threads are often from 600 to 1,000 feet in length, and one pound of cocoons ought to give a combined thread about 528,000 feet long. The process of raising silkworms is tedious from beginning to end, as may be judged from the fact that the product of 1,000 worms is required to make a single pound of merchantable silk.



SYRIAN SILK-WINDERS.

The strands thus made into thread are passed on to the weaver and manufactured into the delicate fabrics which delight the eyes and gladden the hearts alike of pagan and Christian alike. At this point of manufacture, however, when the product passes into the loom, adulterations and frauds become possible. It is impossible to adulterate the thread, but when the thread becomes combined with many thousands of others to make cloth frauds are frequently practiced. In few lines of dry goods is adulteration more frequently practiced than in silks, a fact which has been caused by the demand for cheap yet showy goods, for in this country the servant must look as well as the millionaire's daughter; the woman who scrubs the front steps is as ambitious, so far as dress is concerned, as the woman who sits in the parlor. There being a demand, therefore, for the greatest possible show at the least possible price, metallic dyes came into use, and also the practice of weighing the yarn, especially that which goes into the manufacture of black silk tassels and fringes, and to such an extent is this adulteration practiced that oftentimes these goods, in weight, two-thirds dye and one-third cloth.

Aside from China, where silk has always been made in abundance, silk culture is an important branch of industry in Palestine, in Syria, particularly in the Lebanon range, where both Christians and Mohammedans work side by side in the manufacture and realize well on their labors. It is manufactured with profit in Turkey and Greece, and also in Italy. In San Remo and Genoa, in Naples, and other towns on the western coast of the peninsula, whole streets are given up to silk-workers, and picturesque spectacles are presented by these people with their spinning wheels and looms, their trays and cocoons, and the huge baskets of leaves brought in from the surrounding mulberry plantations for the sustenance of their stock in trade. Largely cultivated in Spain, Portugal and the South of France, the attempts which have been made in England and Germany have not realized the success hoped for them by the projectors. The climate of the north of Europe is not sufficiently warm, the changes are too great, the proper food for the worms is not a ways to be found, and the quality of the silk depends in no small degree upon the proper leaf furnished for the food.

The quantity of silk annually produced is almost incredibly great. There are every year imported into England over 8,000,000 pounds of raw silk, and over 4,000,000 pounds of "waste," and upward of 100,000 pounds of various grades of thread, a total of more than 12,000,000 pounds a year, to say nothing of silk goods already manufactured, exceeding

in value \$80,000,000. Nor does this represent more than the consumption of a single nation, and it is estimated that the total annual consumption of the world exceeds 100,000,000 pounds a year. Attempts have been made to raise the worm in the United States, but not with marked success. Before the revolutionary war the silkworm was introduced into Virginia, North and South Carolina, and Georgia, but the industry died out completely during the revolution, and has not been resumed to any considerable extent. But the silk manufactures of this country form an important part of its business. By the census of 1880, it appeared that there were 382 factories with a capital of \$19,125,300, employing 30,000 hands, and turning out in the preceding year \$34,519,793 worth of goods.



CHINESE SPINNERS OFF DUTY.

The days of the excessive costliness of silk have gone by, and the probability is that in the next few years large additions will be made to the silk-producing area of the world. Southern California, many parts of the Southern States, the West Indies, Mexico, Central America, the northern part of South America and large districts in Africa are excellently well suited to the growth and development of the worm, as well as the mulberry on which it feeds, and in not a few localities arrangements are now being made, both in this and other countries, by planting mulberry groves, to prepare for silk culture.

Source of the Mississippi. For many years students have been answering the question, "What is the source of the Mississippi?" without a



SYRIAN SILK-WINDERS.

doubt that they answered truly in saying, "Lake Itasca," and yet, in all this time, far up in the wilds of Minnesota, the cold, deep waters of Veritas Cupert have been silently performing the function of a primal reservoir, and flowing on through the great channel to the gulf. Indians have pushed their birch canoes out upon the lake beyond and above Itasca, followed their favorite sports upon its shores, and slaked their thirst at its crystal fountains—giving it a name of their own full of beauty and meaning, "Pokeyama," which our English translates, "The place where the waters gather." But now the spirit of adventure has thrown a new light upon Pokeyama. The red man no longer holds undisputed sway, for his white brothers have invaded the pathless forests and pushed their boats out upon the silent lake, renaming it "Glazier," in honor of the intrepid man who has established its true relation to the Mississippi. This explorer, as is well known, was the leader of an expedition which visited the head waters of the Mississippi in 1881. For some time before the final step of forming such an expedition had been taken, Capt. Glazier had strongly suspected that Lake Itasca was not the true source. The doubt of its being such had been held by him ever since his journey on horseback across the continent from Boston to San Francisco in 1876, when he heard from Indians who had lived in Northern Minnesota that they knew of another lake to the south of Itasca which they believed to be the source of the "Father of Waters." So the project began. From that time Capt. Glazier looked forward to the day when he should satisfy himself on the subject. For, be it known, he is a born explorer. It is generally known now, by his own account and by the accounts of those who have been interested in the matter, how this lake was found by him and his companions, and why it had remained so long unrecognized. There can be no doubt as to the claim it now holds upon our maps, and intelligent people hail its discovery as the correction of an error which has been too long disregarded. For the purposes of obtaining sketches of the country around the head waters, and further investigating the northern tributaries of the river, a number of gentlemen interested in geography and science will accompany Capt. Glazier this summer to the Upper Mississippi. This trip is announced to be chiefly one of pleasure, although some serious attention will be paid to photography, geology, and botany by experts of the party. The country is certainly full of charm for devotees of these sciences, and those who have been following the subject of the newly located source hitherto will doubtless await with interest further developments which this second journey will probably bring forth.—*Chicago Herald.*

Learning from the Indians.

It is well known that the white people obtained of the Indians the maize which is one of the greatest staple agricultural productions of the United States to-day, and which still goes by the name of Indian corn. In England, and in the Bible, "corn" ordinarily means wheat, because it is generally applied to the grain from which the bread of the common people is made. In Scotland, for this reason, "corn" means oats; and in the United States it means maize. It is not generally known, however, that the whites found the Indians cultivating corn carefully, and storing it up in bags and granaries; nor that the whites learned the art of making maple sugar from the Indians before they knew much about any other kind of sugar.

Gov. Bradford's account of the settlement of the Plymouth Colony is conclusive as to the use the Indians made of their corn. On the occasion of the Pilgrims' very first landing on Cape Cod, on the 15th of November, 1620, they found some deserted huts, and in them "faire Indian baskets filled with corn, and some in ears, faire and good, of diverse colours, which seemed to them a very goodly sight (having never seen any such before)."

The beauty of Indian corn, either when growing or harvested, is certainly a pleasant revelation to those who have never seen it before. Returning to their ship, the Pilgrims "tooke with them parte of ye corne, and buried up ye rest, and so, like ye men from Escholl, carried with them of ye fruits of yeland and showed their brethren; of which, & their returne, they were marvelously glad, and their hearts encouraged."

Going once more to the same spot, they found two deserted Indian houses, and "also there was found more of their corne, & of their beanes of various colours."

This is the first mention of New England beans. The Pilgrims helped themselves from these Indian granaries, intending to pay the natives afterwards.

As to the making of maple sugar, the French settlers in Canada were learning this art about the same time that the Pilgrims were establishing themselves at Plymouth. Lescarbot, who wrote in 1606, has an account of the Indians tapping the maple trees for their sweet sap. Many other French writers, chiefly missionaries, describe the Indians' method of gathering the sap in vessels made of birch bark; but their chief use of it seems to have been as a drink.

Father Christian Le Clercq, however, a missionary who went to Canada in 1675, has left, in French, in his work entitled "Nouvelle Relation de la Gaspésie," an account of Indian maple sirup-making and sugar-making which indicates that they had long possessed the art. He wrote:

"As to the liquor of the maple, which is the sap of the tree itself, it is equally as delicious to the French as to the savages, who in spring-time give themselves to it with glad hearts. It is true, moreover, that it is very pleasant and abundant in Gaspesia; for from a very little opening in the maple tree, made by a hatchet, enough can be distilled to make ten or a dozen vessels of it."

"What appears to me very remarkable in the juice of the maple is, that if, by boiling, the quantity be reduced to one-third, it becomes a veritable sirup, which hardens little by little into sugar, taking on a reddish color."

"Of this sugar are made little cakes or loaves (*petits pains*) which are sent to France, and which in use often serve well in default of French sugar."

"I have myself," the good father adds, "often mixed this sugar with brandy, cloves, and cinnamon, which made a highly agreeable liquor."

To this day maple sugar is brought into Quebec in *petits pains* and in small cornucopias of birch bark.

Made Rich by a Blast.

The papers have lately mentioned how many prominent mines of the country were discovered by chance. There is a scrap to be added to the history of the Cortez mines. Simeon Wenban had run the Garrison Tunnel at great expense and was left a poor man, owing his creditors \$150,000. There was not a pound of ore in sight whereby the debt might be paid. As a last resort, with a forlorn hope, after the mine had been closed, Simeon Wenban drilled a hole in the hanging wall and blasted out a huge piece of rock, which he found to be almost a solid block of metal and part of an immense vein which had been paralleled hundreds of feet. This fortunate last effort marked a sudden change that seldom falls to the lot of man. It was Wenban, the poor man, the laborer, before that blast was fired; it was Simeon Wenban, the millionaire, but a second thereafter. The first month's run of his little mill gave him \$30,000, and ever since he has grown more wealthy. This mine is the best paying property in the State at the present time.—*Central Nevada.*

Baptist Transl.

The following dialogue took place between two old colored folks on the street:

"Allanta's got rapid transit now, sure."

"What do you mean—the dummy kays?"

"No, I doesn't mean no dummy."

"You mus' be talkin' 'bout de 'lectric line, den."

"No, I isn't, neither."

"Well, I gives it up; what you talkin' 'bout?"

"I'm talkin' 'bout dat patrol waggin, case it takes you farder in ten minutes dan you'll get back from in six months."—*Yankee Blade.*

Refining Away Fidelity.

Canine fidelity, according to a recent writer, is declining. As careful breeding develops the beauty and amiability of the dog, the stronger and more savage traits of his nature are eliminated; and though gentler, and a safer pet, the dog of the future will lack the intensity of devotion which marked former types.

A PAINTER locked up in the jail at Dubuque, Iowa, is decorating the walls with landscape pictures.

THE SUNDAY SCHOOL.

AN INTERESTING AND INSTRUCTIVE LESSON.

Reflections of an Elevating Character—Wholesome Food for Thought—Studying the Scriptural Lesson Intelligently and Profitably.

Lesson for Sunday, September 6, John 8:31-47.

Wherever we meet with Jesus he is masterly. Is he healing the sick? Is he comforting the sorrowing? Is he reasoning with his enemies? Everywhere he is flawless, perfect. Here we have an example of our Savior's argument. It is unanswerable. And the question with which the lesson ends still stands as a quenchless challenge to the world. "Which of you convinceth me of sin?" Speechless we are. And what then is the conclusion? If without sin, then he is what he claimed to be, the Son of God. And what am I? One of two things, either a rebel or a disciple. Which is it?

WHAT THE LESSON SAYS.

Then said Jesus, I, e., whom many believed (professionally) on him. In Tischenor's Greek text the 30th verse is paraphrased with this, as properly introducing it. The word said is imperfect, kept saying or began to say.—Believed. Greek had believed, had professed belief.—Disciples indeed. Greek, Truly disciples of mine.

The truth. Same word used in the clause before ("disciples indeed") i. e., truly.—Make you free. Or, free you. See Rom. 6:18.

Answered him. Literally, to him, the proposition being exceptionally thrown in here as if to express attitude.—Never in bondage. Doubtless a favorite delusion of the Jew.

Servant. Same word as is found in the term bondage just used. "We were never in bondage," they say. Christ answers in effect: "Ye are in bondage to sin."

Forever. Greek, eis ton aion, eternally.—Ever. Same as forever in the original, i. e., eternally.

If the son. In Dr. Conant's rendition the last clause of the preceding verse is connected with this. See Variations.—Free in reality. The Greek word is being, present participle adversely used, i. e., in actual life.

My word. The word my is put in an emphatic position, the word, my word.—No place. From the verb, meaning room or space. Capacity is the sense of it. It is this same verb that is used in John 2:6, of the water-pots "containing two or three firkins apiece."

With my Father; i. e., in company with. Proposition para, intimating close relationship. Indeed, at Mark 3:21, the mere proposition itself points to friendship or kinship. "His friends," or kindred. (Margin. Greek: Those with him.)—And ye. The ye is accented. See Variations here. "The Father."

Abraham is our father. A strong expression in the Greek: The father of us (that belong to us) is Abraham. See Variations.—Abraham's children. Better, children of Abraham, to match the expression which follows, thus, If children of Abraham ye be, the works of Abraham ye would do.

Convinced. Better, convict, to bring proof. Therefore. Emphatic in the Greek: Because of this—Ye are not of God. Greek: From God ye are not.

WHAT THE LESSON TEACHES.

Disciples indeed. That means in every deed. "Truly disciples" is the Greek. The children sometimes ask for "truly stories." What the world is looking for is truly Christians. The crying need of the times for purposes of defense and aggression is a stalwart type of Christianity, Christians upright and outright. Christians through and through. This seems to be the reference here. Christ is speaking to Christians, so called or so esteemed, professed believers already. To these he says, if you wish to be really and truly Christians, Christians whose names go down in the book of life and who have the veritable root of the matter in them, you will continue in my word. The gift of continuance, may God give us all!—Believe and keep right on believing.

The truth shall make you free. It is a word of wide application. It is a large significance has not yet been fully fathomed or compassed, but there are traces of its meaning everywhere. What-ever freedom you and I have—freedom at all worthy of the name—is truth-freedom, the freedom whereby Christ has set us free. The liberty of this nation is the same sort, so far as it is genuine. It is the truth that has made us free. What was it set the colored man free—what but the truth, working in men's hearts? And yet I see slaves all about me, white slaves, black slaves. They know sin, they know not Jesus, and whosoever committeth sin is the servant of sin. That query of Pilate's was a bondslave's query: "What is truth?" He was not one of God's free men. Are you?

We be Abraham's seed and were never in bondage to any man. Very forgetful they were, possessed of wretched memories. How about Pharaoh and Egypt, how about Nebuchadnezzar and Babel? "We be Abraham's seed." Yes, trouble at it, seed of poverty, humiliation and loss. Were we not used to sing it?

"Ye chosen seed of Israel's race, A remnant weak and small, Go spread your troubled rays, And crown him Lord of all."

Yea, Lord, if ever my soul rises in spiritual pride to vaunt its own freedom and strength, give me to see my enslavement in the flesh and my great weakness in self that thou may be all in all. Give us thy freedom; all else is slavery.

This did not Abraham. I would humbly sit at the feet of this great Master for all I wish to know. He will teach me the use of words as well as the great lessons of life and duty. No greater rhetorician ever lived, nor more potent enunciator of the truth. This did not Abraham. The term is powerful, simple, yet overwhelming. I can see the few wince up or as if a sharp whip-lash had cut him, or an arrow stung him to the quick. Our best writers, orators, have gotten their lessons here. Carlyle speaking of the Pope's emissaries, who led John Huss to the stake, there breaking all their promises of safe conduct, simply, strongly, says: "That was not well done." Ah, how it cuts! May the Lord teach us all the use of the bow.

"He that is of God, heareth God's words." And now I understand a little better that saying of Paul, the "Abba Father" of Gal. iv. 6. It is God's spirit within, answering to God's call without. The response that the soul freely makes to the overtures of grace is itself of grace, it is given of God. For by grace are ye saved through faith, and that not of yourselves. It is the gift of God. And so we teachers, preachers, Christian workers all, have only to speak the word, and sow the seed, asking God to bless and make truth answer truth. After a while but the Holy Spirit can do the work? Holy Spirit, make us thy instruments and use us, and so to make souls to hear.

Next Lesson—"Christ and the Blind Man," John 9:1-11, 35-38.

Sober Thought.

It is expensive economy to make a part of the truth suffer for the whole.

The balloon route to the top of Olympus has never been successfully traveled.

Beware of the vicious man who proposes to reform his life on the installment plan.

Don't worry your brain about the man in the moon, but study the man in your own overcoat.

The true prince will find it easier to disguise himself than the world would have him believe.